WHAT IS CLAIMED IS:

1. A measuring system for measuring performance of an imaging optical system by use of an interferometer, said measuring system comprising:

an interferometer arranged to measure transmission wavefronts separately or sequentially, in relation to at least one of plural measurement points defined along a plane perpendicular to an optical axis of the imaging optical system, wherein position coordinates of object side and image side imaging points of the plural measurement points are measured; and

a computing unit being communicated with said interferometer, said computing unit being operable to calculate a wavefront as measured by said interferometer and at least one of a wavefront aberration and an imaging state of the imaging optical system, and said computing unit being operable to correct a measured value related to at least one of a wavefront aberration and an imaging state of the imaging optical system at another measurement point, while taking, as a reference, at least one of a wavefront aberration and an imaging state at a standard point set along a plane perpendicular to the optical axis.

2. A measuring system according to Claim 1, wherein the measurement of a transmission wavefront and position coordinates with respect to the standard point is performed plural times more than the measurement of the transmission wavefront and position coordinates with respect to another measurement point.

3. A measuring system according to Claim 2, wherein measurement of the transmission wavefront and position coordinates with respect to the standard point is performed simultaneously and every time the measurement of the transmission wavefront and position coordinates with respect to another measurement point is performed.

4. A measuring system according to Claim 1, wherein the standard point is an object point and an image point on the optical axis of the imaging optical system.

5. A measuring system according to Claim 1, wherein the position coordinates of the measurement point concern a relative coordinate system with respect to the position coordinates of the standard point.

6. A measuring system according to Claim 1, wherein an optical system for measurement of the standard point is provided separately from an optical system for measurement of the other measurement point.

7. A measuring system according to Claim 6, wherein the optical system for measurement of the other measurement point is movable at the object plane side and the image plane side and it has a laser interferometer for monitoring the position coordinates thereof.

8. A measuring system according to Claim 6, wherein there are optical systems for measurement of the other measuring points, the number of which corresponds to the number of the measurement points.

9. A measuring system according to Claim 1, wherein the measurement with respect to the standard point and the other measurement points is carried out by use of one and the same optical system.

10. A measuring system according to Claim 9, the same optical system for measurement of the standard point and the measurement point is movable at the object plane side and the image plane side, and there is a laser interferometer for monitoring the moved position coordinates.

11. A measuring system according to Claim 1, wherein, in an optical system for the other measurement point, a chief ray of light impinging on the measurement points is registered with a direction of a chief ray of the imaging optical system.

12. A measuring system according to Claim 1, wherein the imaging state includes distortion and curvature of field.

13. A projection exposure apparatus for performing projection exposure by use of an imaging optical system, said apparatus comprising:

an imaging optical system;

an interferometer arranged to measure transmission wavefronts separately or sequentially, in relation to at least one of plural measurement points defined along a plane perpendicular to an optical axis of the imaging optical system, wherein position coordinates of object side and image side imaging points of the plural measurement points are measured; and

a computing unit being communicated with said interferometer, said computing unit being operable to calculate a wavefront as measured by said interferometer and at least one of a wavefront aberration and an imaging state of the imaging optical system, and said computing unit being operable to correct a measured value related to at least one of a wavefront aberration and an imaging state of the imaging optical system at another measurement point, while taking, as a reference, at least one of a wavefront aberration and an imaging state at a standard point set along a plane perpendicular to the optical axis.

14. A measuring system for measuring performance of an imaging optical system, comprising:

an interferometer arranged to measure transmission wavefronts separately or sequentially, in relation to at least one of plural measurement points defined along a plane perpendicular to an optical axis of the imaging optical system, wherein position coordinates of object side and image side imaging points of the plural measurement points are measured; and

a computing unit being communicated with said

interferometer, said computing unit being operable to calculate a wavefront as measured by said interferometer and at least one of a wavefront aberration and an imaging state of the imaging optical system, and said computing unit being operable to correct at least one of distortion and a focal plane at another measurement point of the imaging optical system, while taking, as a reference, at least one of distortion and a focal plane at a standard point set along a plane perpendicular to the optical axis.

15. A measuring system according to Claim 14, wherein a result of measurement of distortion and focal plane with respect to the other measurement point is complemented on the basis of a result of measurement made plural times to the distortion and the focal plane with respect to the standard point.

16. A measuring system according to Claim 14, wherein the standard point is an object point and an image point on the optical axis of the imaging optical system.

17. A measuring system according to Claim 14, wherein the position coordinates of the measurement point concern a relative coordinate system with respect to the position coordinates of the standard point.

18. A measuring system according to Claim 14, wherein correction of a change of distortion and focal plane with respect to time is carried out by subtracting the amount of change from

the measured values of them.

19. A measuring system according to Claim 14, wherein an optical system for measurement of the standard point is provided separately from an optical system for measurement of the other measurement point.

20. A measuring system according to Claim 19, wherein the optical system for measurement of the other measurement point is movable at the object plane side and the image plane side and it has a laser interferometer for monitoring the position coordinates thereof.

21. A measuring system according to Claim 19, wherein there are optical system for the other measurement points, of a number the same as the measurement points.

22. A measuring system according to Claim 14, wherein the measurement with respect to the standard point and the other measurement points is carried out by use of one and the same optical system.

23. A measuring system according to Claim 21, the same optical system for measurement of the standard point and the measurement point is movable at the object plane side and the image plane side, and there is a laser interferometer for monitoring the moved position coordinates.

24. A measuring system according to Claim 14, wherein, in an optical system for the other measurement point, a chief ray of light impinging on the measurement points is registered with a direction of a chief ray of the imaging optical system.

25. A projection exposure apparatus for performing projection exposure by use of an imaging optical system, said apparatus comprising:

an imaging optical system;

an interferometer arranged to measure transmission wavefronts separately or sequentially, in relation to at least one of plural measurement points defined along a plane perpendicular to an optical axis of the imaging optical system, wherein position coordinates of object side and image side imaging points of the plural measurement points are measured; and

a computing unit being communicated with said interferometer, said computing unit being operable to calculate a wavefront as measured by said interferometer and at least one of a wavefront aberration and an imaging state of the imaging optical system, and said computing unit being operable to correct at least one of distortion and a focal plane at another measurement point of the imaging optical system, while taking, as a reference, at least one of distortion and a focal plane at a standard point set along a plane perpendicular to the optical axis.

26. A method of measuring performance of an imaging

optical system by use of an interferometer, said method comprising the steps of:

measuring, by use of the interferometer, transmission wavefronts separately or sequentially, in relation to at least one of plural measurement points defined along a plane perpendicular to an optical axis of the imaging optical system, wherein position coordinates of object side and image side imaging points of the plural measurement points are measured;

calculating a wavefront as measured by the interferometer and at least one of a wavefront aberration and an imaging state of the imaging optical system; and

correcting a measured value related to at least one of a wavefront aberration and an imaging state of the imaging optical system at another measurement point, while taking, as a reference, at least one of a wavefront aberration and an imaging state at a standard point set along a plane perpendicular to the optical axis.

27. A method of measuring performance of an imaging optical system by use of an interferometer, said method comprising the steps of:

measuring, by use of the interferometer, transmission wavefronts separately or sequentially, in relation to at least one of plural measurement points defined along a plane perpendicular to an optical axis of the imaging optical system, wherein position coordinates of object side and image side imaging points of the plural measurement points are measured;

calculating a wavefront as measured by said interferometer

and at least one of a wavefront aberration and an imaging state of the imaging optical system; and

correcting at least one of distortion and a focal plane at another measurement point of the imaging optical system, while taking, as a reference, at least one of distortion and a focal plane at a standard point set along a plane perpendicular to the optical axis.